


[Subscribe \(Full Service\)](#) [Register \(Limited Service, Free\)](#) [Login](#)
 The ACM Digital Library The Guide

THE ACM DIGITAL LIBRARY


[Feedback](#) [Report a problem](#) [Satisfaction survey](#)

Recommender systems in e-commerce

Full text [PDF \(113 KB\)](#)
Source [Electronic Commerce archive](#)
[Proceedings of the 1st ACM conference on Electronic commerce](#) [table of contents](#)

Denver, Colorado, United States

Pages: 158 - 166

Year of Publication: 1999

ISBN:1-58113-176-3

Authors [J. Ben Schafer](#) GroupLens Research Project, Department of Computer Science and Engineering, University of Minnesota, Minneapolis, MN

[Joseph Konstan](#) GroupLens Research Project, Department of Computer Science and Engineering, University of Minnesota, Minneapolis, MN

[John Riedi](#) GroupLens Research Project, Department of Computer Science and Engineering, University of Minnesota, Minneapolis, MN

Sponsor [SIGEcom: ACM Special Interest Group on Electronic Commerce](#)
Publisher ACM Press New York, NY, USA

Additional Information: [references](#) [cited by](#) [index terms](#) [collaborative colleagues](#) [peer to peer](#)
Tools and Actions: [Find similar Articles](#) [Review this Article](#)
[Save this Article to a Binder](#) [Display Formats: BibTex](#) [EndNote](#) [ACM Ref](#)
DOI Bookmark: Use this link to bookmark this Article: <http://doi.acm.org/10.1145/336992.337035>
[What is a DOI?](#)

↑ REFERENCES

Note: OCR errors may be found in this Reference List extracted from the full text article. ACM has opted to expose the complete List rather than only correct and linked references.

- 1 Christopher Avery, Paul Resnick, and Richard Zeckhauser 1999. The Market for Evaluations. *American Economic Review*, 89(3): pp. 564-583.
- 2  Marko Balabanović , Yoav Shoham, Fab: content-based, collaborative recommendation, *Communications of the ACM*, v.40 n.3, p.66-72, March 1997
- 3 Chumki Basu, Haym Hirsh, and William Cohen 1998. Recommendation as classification: using social and contentbased information in recommendation. In *Proceedings of the 1998 Workshop on Recommender Systems*, pages 11-15.
- 4 John S. Breese, David Heckerman, and Carl Kadie 1998. Empirical analysis of predictive algorithms for collaborative filtering. In *Proceedings of the 14th Conference on Uncertainty in Artificial Intelligence (UAI-98)*, pp 43-52.
- 5  Will Hill , Larry Stead , Mark Rosenstein , George Furnas, Recommending and evaluating choices in a virtual community of use, *Proceedings of the SIGCHI conference on Human factors in computing systems*, p.194-201, May 07-11, 1995, Denver, Colorado, United States
- 6  Joseph A. Konstan , Bradley N. Miller , David Maltz , Jonathan L. Herlocker , Lee R. Gordon , John Riedl, GroupLens: applying collaborative filtering to Usenet news,

Communications of the ACM, v.40 n.3, p.77-87, March 1997

- 7 Don Peppers and Martha Rogers 1997. *The One to One Future : Building Relationships One Customer at a Time*. Bantam Doubleday Dell Publishing.
- 8 B. Joseph Pine II 1993. *Mass Customization*. Harvard Business School Press. Boston, Massachusetts
- 9 B. Joseph Pine II, Don Peppers, and Martha Rogers 1995. Do you want to keep your customers forever? *Harvard Business Review*, 1995(2): pp. 103-114.
- 10 Frederick F. Reichheld and W. Earl Sasser, Jr 1990. *Zero Defections: Quality Comes to Services*. *Harvard Business School Review*, 1990(5): pp. 105-111.
- 11 Frederick F. Reichheld 1993. *Loyalty-Based Management*. *Harvard Business School Review*, 1993(2): pp. 64-73.
- 12  Paul Resnick , Neophytos Iacovou , Mitesh Suchak , Peter Bergstrom , John Riedl, *GroupLens: an open architecture for collaborative filtering of netnews*, *Proceedings of the 1994 ACM conference on Computer supported cooperative work*, p.175-186, October 22-26, 1994, Chapel Hill, North Carolina, United States
- 13  Badrul M. Sarwar , Joseph A. Konstan , Al Borchers , Jon Herlocker , Brad Miller , John Riedl, *Using filtering agents to improve prediction quality in the GroupLens research collaborative filtering system*, *Proceedings of the 1998 ACM conference on Computer supported cooperative work*, p.345-354, November 14-18, 1998, Seattle, Washington, United States
- 14  Ben Shneiderman, *Direct manipulation for comprehensible, predictable and controllable user interfaces*, *Proceedings of the 2nd international conference on Intelligent user interfaces*, p. 33-39, January 06-09, 1997, Orlando, Florida, United States
- 15 Upendra Shardanand , Pattie Maes, *Social information filtering: algorithms for automating "word of mouth"*, *Proceedings of the SIGCHI conference on Human factors in computing systems*, p.210-217, May 07-11, 1995, Denver, Colorado, United States

↑ CITED BY 33

- 1  Marco Grimaldi , Pádraig Cunningham, *Experimenting with music taste prediction by user profiling*, *Proceedings of the 6th ACM SIGMM international workshop on Multimedia information retrieval*, October 15-16, 2004, New York, NY, USA
- 2  Yu Li , Zuo Meiyun , Bo Yang, *Analysis and design of e-supermarket shopping recommender system*, *Proceedings of the 7th international conference on Electronic commerce*, August 15-17, 2005, Xi'an, China
- 3 C. M. Karat , C. Brodie , J. Karat , J. Vergo , S. R. Alpert, *Personalizing the user experience on ibm.com*, *IBM Systems Journal*, v.42 n.4, p.686-701, October 2003
- 4  Partha Sarathi Dutta , Sandip Debnath , Sandip Sen, *A shopper's assistant*, *Proceedings of the fifth international conference on Autonomous agents*, p.59-60, May 2001, Montreal, Quebec, Canada
- 5  Kent Wittenburg , Tom Lanning , Michael Heinrichs , Michael Stanton, *Parallel bargraphs for consumer-based information exploration and choice*, *Proceedings of the 14th annual ACM symposium on User interface software and technology*, November 11-14, 2001, Orlando, Florida
- 6  Bradley N. Miller , Istvan Albert , Shyong K. Lam , Joseph A. Konstan , John Riedl, *MovieLens unplugged: experiences with an occasionally connected recommender system*, *Proceedings of the 8th international conference on Intelligent user interfaces*, January 12-15, 2003, Miami, Florida, USA

Daniel A. Menascé, A Reference Model for Designing an E-Commerce Curriculum, IEEE

Concurrency, v.8 n.1, p.82-85, January 2000

◆ Ewa Callahan, Jürgen Koenemann, A comparative usability evaluation of user interfaces for online product catalog, Proceedings of the 2nd ACM conference on Electronic commerce, p.197-206, October 17-20, 2000, Minneapolis, Minnesota, United States

Marco Degenni, Pasquale Lops, Giovanni Semeraro, Maria Francesca Costabile, Stefano Paolo Guida, Oriana Licchelli, Improving collaborative recommender systems by means of user profiles, Designing personalized user experiences in eCommerce, Kluwer Academic Publishers, Norwell, MA, 2004

◆ Sílvio César Cazella, Eliseo Reategui, Luis Otávio Campos Alvares, E-commerce recommenders' authority: applying the user's opinion relevance in recommender systems, Proceedings of the 12th Brazilian symposium on Multimedia and the web, November 19-22, 2006, Natal, Rio Grande do Norte, Brazil

Daniel Schwabe, Robson Mattos Guimarães, Gustavo Rossi, Cohesive Design of Personalized Web Applications, IEEE Internet Computing, v.6 n.2, p.34-43, March 2002

◆ Tracy Riggs, Robert Wilensky, An algorithm for automated rating of reviewers, Proceedings of the 1st ACM/IEEE-CS joint conference on Digital libraries, p.381-387, January 2001, Roanoke, Virginia, United States

Peter Haddawy, Vu Ha, Angelo Restificar, Benjamin Geisler, John Miyamoto, Preference elicitation via theory refinement, The Journal of Machine Learning Research, 4, 12/1/2003

◆ Zan Huang, Hsinchun Chen, Daniel Zeng, Applying associative retrieval techniques to alleviate the sparsity problem in collaborative filtering, ACM Transactions on Information Systems (TOIS), v.22 n.1, p.116-142, January 2004

◆ George Karypis, Evaluation of Item-Based Top-N Recommendation Algorithms, Proceedings of the tenth international conference on Information and knowledge management, October 05-10, 2001, Atlanta, Georgia, USA

◆ Michael P. O'Mahony, Neil J. Hurley, Guénolé C.M. Silvestre, Detecting noise in recommender system databases, Proceedings of the 11th international conference on Intelligent user interfaces, January 29-February 01, 2006, Sydney, Australia

◆ Sarah Spiekermann, Product context in EC websites: how consumer uncertainty and purchase risk drive navigational needs, Proceedings of the 5th ACM conference on Electronic commerce, May 17-20, 2004, New York, NY, USA

◆ Maritza L. Calderón-Benavides, Cristina N. González-Caro, José de J. Pérez-Alcázar, Juan C. García-Díaz, Joaquin Delgado, A comparison of several predictive algorithms for collaborative filtering on multi-valued ratings, Proceedings of the 2004 ACM symposium on Applied computing, March 14-17, 2004, Nicosia, Cyprus

Carolyn Brodie, Clare-Marie Karat, John Karat, Creating an E-commerce environment where consumers are willing to share personal information, Designing personalized user experiences in eCommerce, Kluwer Academic Publishers, Norwell, MA, 2004

◆ Eui-Hong (Sam) Han, George Karypis, Feature-based recommendation system, Proceedings of the 14th ACM international conference on Information and knowledge management, October 31-November 05, 2005, Bremen, Germany

Robin Burke, Interactive Critiquing for Catalog Navigation in E-Commerce, Artificial Intelligence Review, v.18 n.3-4, p.245-267, December 2002

◆ Sarah Spiekermann, Jens Grossklags, Bettina Berendt, E-privacy in 2nd generation E-commerce: privacy preferences versus actual behavior, Proceedings of the 3rd ACM conference on Electronic Commerce, p.38-47, October 14-17, 2001, Tampa, Florida, USA

Jan O. Blom, Challenges for user-centric personalization research, Designing personalized user

experiences in eCommerce, Kluwer Academic Publishers, Norwell, MA, 2004

- ◆ Bin Yu , Munindar P. Singh, Searching social networks, Proceedings of the second international joint conference on Autonomous agents and multiagent systems, July 14-18, 2003, Melbourne, Australia
- ◆ Badrul Sarwar , George Karypis , Joseph Konstan , John Reidl, Item-based collaborative filtering recommendation algorithms, Proceedings of the 10th international conference on World Wide Web, p.285-295, May 01-05, 2001, Hong Kong, Hong Kong
- ◆ Cai-Nicolas Ziegler , Georg Lausen , Lars Schmidt-Thieme, Taxonomy-driven computation of product recommendations, Proceedings of the thirteenth ACM international conference on Information and knowledge management, November 08-13, 2004, Washington, D.C., USA
- ◆ Badrul Sarwar , George Karypis , Joseph Konstan , John Reidl, Analysis of recommendation algorithms for e-commerce, Proceedings of the 2nd ACM conference on Electronic commerce, p.158-167, October 17-20, 2000, Minneapolis, Minnesota, United States
- ◆ Mukund Deshpande , George Karypis, Item-based top-N recommendation algorithms, ACM Transactions on Information Systems (TOIS), v.22 n.1, p.143-177, January 2004
- ◆ Ian Pascal Volz, The impact of online music services on the demand for stars in the music industry, Proceedings of the 15th international conference on World Wide Web, May 23-26, 2006, Edinburgh, Scotland
- ◆ Sander M. Bohte , Enrico Gerding , Han La Poutré, Market-based recommendation: Agents that compete for consumer attention, ACM Transactions on Internet Technology (TOIT), v.4 n.4, p.420-448, November 2004

Anthony Jameson, Adaptive interfaces and agents, The human-computer interaction handbook: fundamentals, evolving technologies and emerging applications, Lawrence Erlbaum Associates, Inc., Mahwah, NJ, 2002

Saverio Perugini , Marcos André Gonçalves , Edward A. Fox, Recommender Systems Research: A Connection-Centric Survey, Journal of Intelligent Information Systems, v.23 n.2, p.107-143, September 2004

↑ INDEX TERMS

Primary Classification:

K. Computing Milieux

↪ K.4 COMPUTERS AND SOCIETY

Additional Classification:

H. Information Systems

↪ H.1 MODELS AND PRINCIPLES

↪ H.5 INFORMATION INTERFACES AND PRESENTATION (I.7)

↪ H.5.2 User Interfaces (D.2.2, H.1.2, I.3.6)

↪ Subjects: Interaction styles (e.g., commands, menus, forms, direct manipulation)

General Terms:

Design, Human Factors, Management, Performance, Theory

Keywords:

cross-sell, customer loyalty, electronic commerce, interface, mass customization, recommender systems, up-sell

↑ **Collaborative Colleagues:**

Joseph Konstan:	Steven Aronowitz Phillip Barry Al Borchers Shih-Fu Chang Ed Huai-hsin Chi Elizabeth Churchill Rachna Dhamija Stephen Fischer Batya Friedman Shahram Ghandeharizadeh	Nathaniel Good Jens Grossklags Tara Gustafson Jon Herlocker George Karypis Jonathan Lazar Deirdre Mulligan Klara Nahrstedt Jenny Preece John Reidl	John Riedl John Riedl Badrul Sarwar J. Ben Schafer David Thaw Hans de Graaff
John Riedl:	Joseph Konstan J. Ben Schafer		
J. Ben Schafer:	Al Borchers J. Philip East Nathaniel Good Tara Gustafson Jon Herlocker Joseph Konstan Joseph A. Konstan John Riedl John Riedl Badrul Sarwar		

↑ **Peer to Peer - Readers of this Article have also read:**

- Constructing reality **Proceedings of the 11th annual international conference on Systems documentation**
Douglas A. Powell , Norman R. Ball , Mansel W. Griffiths
- Data structures for quadtree approximation and compression **Communications of the ACM** 28, 9
Hanan Samet
- A hierarchical single-key-lock access control using the Chinese remainder theorem **Proceedings of the 1992 ACM/SIGAPP Symposium on Applied computing**
Kim S. Lee , Huizhu Lu , D. D. Fisher
- An intelligent component database for behavioral synthesis **Proceedings of the 27th ACM/IEEE conference on Design automation**
Gwo-Dong Chen , Daniel D. Gajski
- The GemStone object database management system **Communications of the ACM** 34, 10
Paul Butterworth , Allen Otis , Jacob Stein

The ACM Portal is published by the Association for Computing Machinery. Copyright © 2007 ACM, Inc.

[Terms of Usage](#) [Privacy Policy](#) [Code of Ethics](#) [Contact Us](#)

Useful downloads:  [Adobe Acrobat](#)  [QuickTime](#)  [Windows Media Player](#)  [Real Player](#)

PORTAL
USPTO

Subscribe (Full Service) Register (Limited Service, Free) Login

Search: The ACM Digital Library The Guide

polymorphic data in e-commerce

SEARCH

THE ACM DIGITAL LIBRARY

Feedback Report a problem Satisfaction survey

Terms used **polymorphic data** in **e commerce**

Found 11,916 of 201,798

Sort results by relevance Save results to a Binder
 Search Tips
 Open results in a new window

Display results in expanded form

Try an [Advanced Search](#)
[Try this search in The ACM Guide](#)

Results 41 - 60 of 200 Result page: previous 1 2 3 4 5 6 7 8 9 10 next
 Best 200 shown

Relevance scale 

41 Poly_{AML}: a polymorphic aspect-oriented functional programming language

 Daniel S. Dantas, David Walker, Geoffrey Washburn, Stephanie Weirich
 September 2005 **ACM SIGPLAN Notices, Proceedings of the tenth ACM SIGPLAN international conference on Functional programming ICFP '05**, Volume 40 Issue 9

Publisher: ACM Press

Full text available:  pdf(1.01 MB)Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

This paper defines Poly_{AML}, a typed functional, aspect-oriented programming language. The main contribution of Poly_{AML} is the seamless integration of polymorphism, run-time type analysis and aspect-oriented programming language features. In particular, Poly_{AML} allows programmers to define type-safe polymorphic advice using pointcuts constructed from a collection of polymorphic join points. Poly_{AML} also co ...

Keywords: ad-hoc polymorphism, aspects-oriented programming, functional programming, type inference, type systems

42 Data types are values

 James Donahue, Alan Demers
 July 1985 **ACM Transactions on Programming Languages and Systems (TOPLAS)**, Volume 7 Issue 3

Publisher: ACM Press

Full text available:  pdf(1.55 MB)Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#), [review](#)

An important goal of programming language research is to isolate the fundamental concepts of languages, those basic ideas that allow us to understand the relationships among various language features. This paper examines one of these underlying notions, that of data type, with particular attention to the treatment of generic or polymorphic procedures and static type-checking.

43 Type-base flow analysis: from polymorphic subtyping to CFL-reachability

 Jakob Rehof, Manuel Fähndrich
 January 2001 **ACM SIGPLAN Notices, Proceedings of the 28th ACM SIGPLAN-SIGACT symposium on Principles of programming languages POPL '01**, Volume 36 Issue 3

Publisher: ACM Press

Full text available:  pdf(1.23 MB)Additional Information: [full citation](#), [abstract](#), [citations](#), [index terms](#)

We present a novel approach to scalable implementation of type-based flow analysis with

polymorphic subtyping. Using a new presentation of polymorphic subtyping with instantiation constraints, we are able to apply context-free language (CFL) reachability techniques to type-based flow analysis. We develop a CFL-based algorithm for computing flow-information in time $O(n^3)$, where n is the size of the typed program. The algorithm substantially improves upon the best previously ...

44 [E-marketing & e-businesses: Will B2C e-commerce developed in one cultural environment be suitable for another culture: a cross-cultural study between amazon.co.uk \(UK\) and dangdang.com \(China\)](#) 

Qi-Ying Su, Carl Adams
August 2005 **Proceedings of the 7th international conference on Electronic commerce ICEC '05**
Publisher: ACM Press
Full text available:  pdf(391.90 KB) Additional Information: [full citation](#), [abstract](#), [references](#)

In an era of seemingly e-everything e-commerce is changing the way people do business and impacting shopping habits. Increasingly this change has an international dimension in both trans-national transactions and exporting e-commerce business models from one culture to another. Typically this last element has involved exporting Western e-business models to the rest of the world. However, it is unclear if an e-commerce business model developed in one cultural environment would be suitable for another ...

Keywords: business-to-customer (B2C) e-commerce, cross-cultural, individualism vs. collectivism

45 [Session 8: Characterizing customer groups for an e-commerce website](#) 

Qing Wang, Dwight J. Makaroff, H. Keith Edwards
May 2004 **Proceedings of the 5th ACM conference on Electronic commerce EC '04**
Publisher: ACM Press
Full text available:  pdf(722.13 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

In conventional commerce, customer groups with similar interests or behaviours can be observed. Similarly, customers in E-commerce naturally form groups. These groups allow the organization to provide quality of service (QoS) and perform capacity planning. From a system point of view, overall server performance can be improved and resources managed considering customer session behaviour. Previous studies have grouped customers using clustering techniques. Different data metrics have been selected ...

Keywords: electronic commerce, session behaviour, workload characterization

46 [Credit risk management system on e-Commerce: case based reasoning approach](#) 

Mitsuaki Nakasumi
September 2003 **Proceedings of the 5th international conference on Electronic commerce ICEC '03**
Publisher: ACM Press
Full text available:  pdf(153.10 KB) Additional Information: [full citation](#), [abstract](#), [references](#)

This paper addresses the cost imposed on the e-Commerce market when retailer and customer possess an information advantage over credit companies; in short, we examine the transaction cost on the default and the fraud. When retailers and customers differ significantly in terms of their riskiness, and credit companies cannot, or are not permitted to assess these differences, credit companies will attempt to charge all retailers and customers the same premiums for equivalent coverage; unless mechan ...

Keywords: XBRL, case-based reasoning, credit risk, e-commerce

47 [Unboxed objects and polymorphic typing](#) 



Xavier Leroy
**February 1992 Proceedings of the 19th ACM SIGPLAN-SIGACT symposium on
 Principles of programming languages POPL '92**

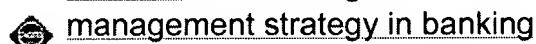
Publisher: ACM Press

Full text available: [pdf\(1.22 MB\)](#)

Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

This paper presents a program transformation that allows languages with polymorphic typing (e.g. ML) to be implemented with unboxed, multi-word data representations. The transformation introduces coercions between various representations, based on a typing derivation. A prototype ML compiler utilizing this transformation demonstrates important speedups.

48 Innovative technologies of e-commerce: Application of e-commerce security



Guoling Lao, Liping Wang

August 2005 **Proceedings of the 7th international conference on Electronic commerce ICEC '05**

Publisher: ACM Press

Full text available: [pdf\(331.36 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

Today, e-commerce has achieved wide applications with its carrier network and information technology's rapid developments. But various security problems set up a lot of barriers for its further progress and the security becomes a bottleneck. Unless these problems are entirely solved, e-commerce cannot go along smoothly. According to these facts, the article tries to find a systematic security solution for the banks engaged in e-commerce. That is: security management strategy. The security strateg ...

Keywords: bank, e-commerce, risk, security management strategy

49 Polymorphic higher-order recursive path orderings



Jean-Pierre Jouannaud, Albert Rubio

March 2007 **Journal of the ACM (JACM)**, Volume 54 Issue 1

Publisher: ACM Press

Full text available: [pdf\(381.33 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

This article extends the termination proof techniques based on reduction orderings to a higher-order setting, by defining a family of recursive path orderings for terms of a typed lambda-calculus generated by a signature of polymorphic higher-order function symbols. These relations can be generated from two given well-founded orderings, on the function symbols and on the type constructors. The obtained orderings on terms are well founded, monotonic, stable under substitution and include &beta ...

Keywords: Automated termination prover tool, Gödel's polymorphic recursor, higher-order rewriting, termination orderings, typed lambda calculus

50 3.2: IT skills: Staffing and management of e-commerce programs and projects



Fred Niederman
 April 2005 **Proceedings of the 2005 ACM SIGMIS CPR conference on Computer personnel research SIGMIS CPR '05**

Publisher: ACM Press

Full text available: [pdf\(365.32 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

Electronic commerce (e-commerce) personnel are instrumental in developing and maintaining electronic commerce programs and projects within firms. In spite of the dot-com bust, the number of firms developing and using e-commerce for interactions with customers and suppliers is growing. Personnel competence as individuals and as a group can be a decisive force in determining the level of success of e-commerce projects. This paper used in-depth interviews toward creating a better understanding of b ...

Keywords: IT governance, IT personnel, e-commerce, project management, project management metrics

51 E-commerce and computer science education 

 Yuzhen Ge, Jiangeng Sun

March 2000 **ACM SIGCSE Bulletin , Proceedings of the thirty-first SIGCSE technical symposium on Computer science education SIGCSE '00**, Volume 32 Issue 1

Publisher: ACM Press

Full text available:  pdf(492.33 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

Electronic commerce is gradually changing the way the commerce is conducted. Computer science graduates will need to be prepared for the challenge posed by the increasing demand for professionals who can develop and maintain electronic commerce systems. By examining the standard computer science curriculum, some suggestions are proposed.

52 Polymorphic splitting: an effective polyvariant flow analysis 

 Andrew K. Wright, Suresh Jagannathan

January 1998 **ACM Transactions on Programming Languages and Systems (TOPLAS)**, Volume 20 Issue 1

Publisher: ACM Press

Full text available:  pdf(517.76 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#), [review](#)

This article describes a general-purpose program analysis that computes global control-flow and data-flow information for higher-order, call-by-value languages. The analysis employs a novel form of polyvariance called polymorphic splitting that uses let-expressions as syntactic clues to gain precision. The information derived from the analysis is used both to eliminate run-time checks and to inline procedure. The analysis and optimizations have been applied to a suite of Scheme progra ...

Keywords: flow analysis, inlining, polyvariance, run-time checks

53 Recommender systems in e-commerce 

 J. Ben Schafer, Joseph Konstan, John Riedi

November 1999 **Proceedings of the 1st ACM conference on Electronic commerce EC '99**

Publisher: ACM Press

Full text available:  pdf(112.96 KB) Additional Information: [full citation](#), [references](#), [citations](#), [index terms](#)

Keywords: cross-sell, customer loyalty, electronic commerce, interface, mass customization, recommender systems, up-sell

54 Dynamic generation of personalized VRML content: a general approach and its 

 application to 3D e-commerce

Luca Chittaro, Roberto Ranon

February 2002 **Proceeding of the seventh international conference on 3D Web technology Web3D '02**

Publisher: ACM Press

Full text available:  pdf(525.06 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

The capability of (semi)automatically adapting the content, structure, and/or presentation of a Web site to address the interests and preferences of each individual user is more and more considered as a key factor to increase user satisfaction and building customer loyalty. However, while a large body of literature is available about making traditional

Web sites adaptive, it is surprising that no research effort has been yet devoted to the problem of adapting Web3D content and presentation. This ...

Keywords: VRML, adaptive interfaces, e-commerce, web architectures

55 Papers: AOSE II: Polymorphic self-* agents for stigmergic fault mitigation in large-scale real-time embedded systems

Derek Messie, Jae C. Oh

July 2005 **Proceedings of the fourth international joint conference on Autonomous agents and multiagent systems AAMAS '05**

Publisher: ACM Press

Full text available: [pdf\(478.02 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

Organization and coordination of agents within large-scale, complex, distributed environments is one of the primary challenges in the field of multi-agent systems. A lot of interest has surfaced recently around self-* (self-organizing, self-managing, self-optimizing, self-protecting) agents. This paper presents polymorphic self-* agents that evolve a core set of roles and behavior based on environmental cues. The agents adapt these roles based on the changing demands of the environment, and are ...

Keywords: SWARM, game theory, multi-agent systems, polymorphism, self-* agents, stigmergy

56 An extension of HM(X) with bounded existential and universal data-types

Vincent Simonet

August 2003 **ACM SIGPLAN Notices , Proceedings of the eighth ACM SIGPLAN international conference on Functional programming ICFP '03**, Volume 38 Issue 9

Publisher: ACM Press

Full text available: [pdf\(178.16 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

We propose a conservative extension of HM(X), a generic constraint-based type inference framework, with bounded existential (a.k.a. abstract) and universal (a.k.a. polymorphic) data-types. In the first part of the article, which remains abstract of the type and constraint language (i.e. the logic X), we introduce the type system, prove its safety and define a type inference algorithm which computes principal typing judgments. In the second part, we propose a realistic constraint so ...

Keywords: constraint-based type inference, existential and universal data-types, structural subtyping

57 A constraint-based approach to guarded algebraic data types

Vincent Simonet, François Pottier

January 2007 **ACM Transactions on Programming Languages and Systems (TOPLAS)**, Volume 29 Issue 1

Publisher: ACM Press

Full text available: [pdf\(614.00 KB\)](#) Additional Information: [full citation](#), [appendices and supplements](#), [abstract](#), [references](#), [index terms](#)

We study HMG(X), an extension of the constraint-based type system HM(X) with deep pattern matching, polymorphic recursion, and *guarded algebraic data types*. Guarded algebraic data types subsume the concepts known in the literature as *indexed types*, *guarded recursive datatype constructors*, *(first-class) phantom types*, and *equality qualified types*, and are closely related to *inductive types*. Their characteristic property is to allow every bra ...

Keywords: GADTs, Generalized algebraic data types, constraint-based type inference